GARDEN AND FOREST.

PUBLISHED WEEKLY BY

THE GARDEN AND FOREST PUBLISHING CO.

Office: Tribune Building, New York.

Conducted by . . . . . Professor C. S. Sargent.

ENTERED AS SECOND-CLASS MATTER AT THE POST OFFICE AT NEW YORK, N. Y.

NEW YORK, WEDNESDAY, APRIL 18, 1894.

TABLE OF CONTENTS.

	PAGE.
Editorial Articles:—Lumbering on State Lands	151
Yellowstone Park	151
Notes of Mexican Travel: In Jalisco.—VII. (With figure.) *C. G. Pringle.*	152
Botanical Notes from Texas.—XVII. *E. N. Plank.*	153
Foreign Correspondence:—London Letter *W. Watson.*	153
Cultural Department:—Winter Pears. *E. P. Powell.*	156
Methods of Setting Out Fruit-trees *T. H. Hoskins, M.D.*	156
Winter Protection of Half-hardy Plants *Professor W. F. Massey.*	156
Tuberous Begonias as Bedding-plants *W. N. Craig.*	157
Ferraria atrata *W. E. Endicott.*	157
Tecophilea cyanocrocus, Iris Sindjarensis. *J. N. G.*	157
Petunias *E. P. P.*	158
The Chinese Wistaria *T. D. Hatfield.*	158
Correspondence:—Hedges for Cold Climates *C. S. C.*	158
Late Frosts in the South-west *Lera S. La Mance.*	158
Snow in April *Danske Dandridge.*	159
Orchids at North Easton *T. D. Hatfield.*	159
Recent Publications	159
Notes	160
Illustration:—Vigna strobilliphora, Fig. 30	155

Lumbering on State Lands.

THE meeting of the American Forestry Association at Albany, in the early part of March, was held in response to an invitation of the Forest Commission of this state, and the reason assigned for holding such a meeting at this place and at this particular season was that it might help the Commission to obtain an appropriation from the state for the purchase of land in the Adirondack reservation. No doubt, also, the Commission appreciated the value of the moral support of the Forestry Association on other points—one of these being the approval of their action in selling spruce timber on the state lands. The Commission had a carefully prepared set of resolutions endorsing their policy. Substitutes for some of these resolutions were presented to the meeting by Mr. Fernow, asserting that it is not advisable to cut and sell any timber from state lands hereafter until a comprehensive and systematic plan of management has been devised, and such methods of supervision instituted as will ensure the permanence of the forest-cover and the reproduction of valuable kinds of timber. Another section affirmed that the practice of cutting all the Spruce above twelve inches in diameter might interrupt the forest-cover and impair the future of the forest. Colonel Fox made an energetic protest against these resolutions, and although most of the members whose opinions are worth considering favored Mr. Fernow's motion, a straddling substitute presented by Mr. Higley was allowed to pass, mainly because the matter was not considered of great importance one way or the other, and partly because the members were adjured not to vote in condemnation of the Commission whose guests they nominally were.

In the light of these resolutions, a report which the State Engineer and Surveyor, Mr. Campbell W. Adams, has just made to the Commissioners of the Land Office on the 29th of March, has an especial interest. The Forest Commission had passed favorably on forty-one applications to cut and remove the spruce from various parts of the state land, and had presented them to the Land Office for approval. This Board referred the resolutions to the State Engineer, asking him (1) whether, in his judgment, the trees covered by the proposed contract should be removed; (2) whether the method of removal, as provided for by the Forest Commission, is sufficient to protect the trees not removed; and (3) whether the prices agreed upon were fair. Upon the last point the bargain was said to be largely in favor of the purchaser, especially since he was not required to pay the state any money until the end of three years, so that really the state furnishes so much capital for the lumbermen's stock of 250,000,000 feet, which can be cut from the 80,000 acres of state land which these forty-one contracts cover. Nevertheless, if the privilege was sold to the highest bidder the price cannot be called unfair.

The first two propositions, however, Mr. Adams answers with emphatic negation, and his vigorous argument ought to convince any one that neither the rights of the people nor the future of the forest have been properly considered in these contracts with lumbermen for the timber on state lands. It is very plain that after being lumbered under contracts like the ones proposed, all the Spruce ridges will be strewn with a net-work of tree-tops and limbs strong enough to hold up under the burden of the next winter's snow, and this, after a season's drying, will furnish tinder to kindle at the touch of the first spark into a fire which would sweep through the forest with resistless force. Every one of these ridges, once burned over, will lose at once and forever its chief value to the state—that is, its value as a preserver of water. The contract provides that the purchaser shall cut his trees in a "workmanlike manner," and that means in accordance with the practice of skilled American woodsmen. Every one knows that it is workmanlike for a logger to fell his trees so that he can move his logs at the least expense and not to fell them with a view of saving the small trees which they may crush. The removal of logs in a workmanlike manner implies cutting roads to the streams, and it means what is still worse, damming the streams for driving, and the water thus set back about the roots of the trees above will kill them and leave a fringe of death about every lake and along every stream.

Some documents which accompany this report, notably a letter from Mr. Morton S. Parmelee, a lumberman of Malone, in this state, and another from the Committee on Forestry of the New York State Association for the Protection of Fish and Game, strongly reinforce the arguments of the State Surveyor. In addition to the great increase of danger from fire, it is shown that these contracts offer a much freer opportunity for trespassers. A block of timber with an unbroken frontier can be protected, but a block broken by radiating lumber-roads opens avenues for trespass on every side. It is argued, too, that the revenue which is expected from the sale of timber will be largely consumed in the added cost of protecting what is left from fire and timber thieves; that, indeed, it would take the entire militia of the state to watch the park when once cut up in this way. The few dollars which the state will receive for the timber, after the increased expense of management and protection is subtracted from it, will be a pitiable offset to the loss of integrity which the forest will suffer. In short, this policy, if consistently carried out, will leave hardly one acre of primitive woods in the wilderness outside of private reserves, or a single place where its original beauty has not been marred by the ravages of man. Besides this, the deer, which are helpless in heavy snow, will be at the mercy of the men and dogs about the lumber-camps when every thicket of Spruce, where they find shelter, is invaded by loggers. At the opening of the session the Governor stated that the standing Spruce timber above twelve inches in diameter has already been sold on more than seventeen thousand acres of state lands. This means the ravage of twenty-seven square miles of timber, itself a park of magnificent proportions, and these new contracts cover four or five times as much more territory. It would seem that the time has already come when the park ought to be preserved from its preservers.

If the buffalo in Yellowstone Park had been properly protected they would now have numbered some four or five hundred, but it seems to have been proved that a very

general slaughter of these animals has been going on during the past year or two. A well-informed correspondent of *Forest and Stream* asserts that in Colonel Anderson's opinion there are not more than two hundred or two hundred and fifty left. Since the head of a buffalo is worth from $200 to $300, and the butcher can do his work with little danger of detection and still less danger of any punishment, any measure looking toward the protection of the public property in the park will improve the present condition of things. We are, therefore, pleased to know that Mr. Lacey's bill for punishing crimes in Yellowstone Park has passed the House. Under this act any person who kills or captures within the limits of the park any animal, bird or fish, unless authorized to do so by regulations made by the Secretary of the Interior, shall be punished by a fine not exceeding a thousand dollars or by imprisonment not exceeding two years, or by both. The park is also by this act placed under the jurisdiction of the United States, so that all the laws applicable to places under such jurisdiction shall be in full force in the park. If any offence which is not prohibited or punishable by the laws of the United States shall be committed within the park the offender shall be liable to punishment under the laws of the state of Wyoming. For the purposes of this act Yellowstone Park is constituted a portion of the United States judicial district of Wyoming, and the United States court for this district is to have jurisdiction over offences against the laws of the United States committed within the park. Persons who are familiar with the conditions of the park feel that this law is inadequate in some particulars, but certainly it is a step in the right direction. Under the present laws and regulations there is no object in the park, whether animate or inanimate, which is safe from vandal attack, and, indeed, the so-called protection of the Government has been, in fact, little more than an advertisement to head-hunters that elk and buffalo and other big game have been gathered into this great pleasure-ground of the people so that they could be hunted and butchered with ease and impunity.

Notes of Mexican Travel.—VII.

IN JALISCO.

THE state of Jalisco, by its varied flora, held me closely throughout my ninth season of botanical exploration in the Mexican Republic. I arrived in Guadalajara, its capital, at the beginning of May last, and kept that base until I left the country in the middle of November.

The rains had not commenced when I entered the state, and its plains and hill-sides were brown and dry, as I had never before seen them, for the springs and rills were nearly all dry, and most of the trees and shrubs were still leafless. The few plants gathered during the first two months of my stay were dearly won by diligent gleaning of wide wastes. By the second week of June thunder-storms were advancing, evening by evening, from the south-east over the coast mountains of Michoacan. These soon traversed the entire state, and were seen, if not encountered, each afternoon with unfailing certainty. About the 1st of July all the landscape was covered with unfolding verdure, and from the middle of that month to the middle of October hosts of plants crowded upon the collector wherever he wandered. The last thunder-shower of the season occurred on the 7th of October, and then followed almost cloudless days in long succession. The sunshine was still warm even on the table-lands, and under its influence the soil rapidly dried again, the springs and brooks ceased to flow, and the ripening and passing of the vegetation was as swift as had been its rise and unfolding. On the highlands a few light frosts fell during early November to complete the destruction of the plants and to turn the botanist homeward, unless he chose to glean in the coast regions.

Next to the four great states of the arid regions of the north—Sonora, Chihuahua, Coahuila and Durango—this state of Jalisco is the largest within the Republic. It is certainly the most populous and wealthy of all, and is second to none in fertility of soil. During the six years of my visiting it I have never known its varied harvests to fail in any degree. I have turned from other districts in years when rain failed to visit them, distressed by the sight of the hunger and squalor of their inhabitants, to find the Jaliscenses as well fed and as happy as ever. Lying upon the southern verge of the table-land and bordering the Pacific, this state is within the belt of abundant and unfailing summer rains, and this situation also ensures a climate which is nearly perfect. Its winter frosts are restricted to the higher lands, and even there are few and light. The Andean system, when passing through Jalisco, appears to be depressed or broken up. There are few elevations above 9,000 feet over sea-level, or 3,000 to 4,000 feet above the average of its plains. Here are many extensive plains, valleys and slopes of excellent fertility, and all of these are natural grazing-grounds in summer and winter. Wide fields of Wheat whiten the valleys in spring-time, and yield place to luxuriant crops of Maize in autumn, when the hill-sides up to the very summits are checkered with grain-fields. Toward the coast Cane-fields and Coffee-plantations abound, and in the various condifions offered by this state flourish the fruits of the entire list, tropical and temperate. Yet, notwithstanding so great prosperity, there is forced upon the observer the fact that the capacities of the soil are but half-developed.

Until within a few years Jalisco has lain remote from the activity and progress of the world. Its capital was only reached by a journey of several days by diligence from the city of Mexico, or by long rides in saddle and diligence from the seaports of Manzanillo and San Blas. To-day the tourist is conveyed in a Pullman car over a branch of the Mexican Central, diverging from the main line at Irapuato. A ride thence of only seven or eight hours along the fertile valley of the Lerma brings him to Guadalajara, the proud "Pearl of the West," as the Mexicans style this beautiful city with white-walled palaces and churches and flowery, umbrageous parks, a city second in size only to the national capital. It is situated on an undulating plain at an elevation of 5,000 feet above sea-level. In all directions from the city the view is bounded by hills either of volcanic or of granitic formation, five to ten miles distant, and 1,000 to 2,000 feet higher than the plain. Some of these hills appear of the most rocky and rugged character; others show softer lines, and are covered with a sparse and low forest composed chiefly of Pinus oöcarpa and Quercus fulva. Twenty-five miles away to the south, beyond several small lakes, rises a chain of mountains some 8,000 feet in altitude, while in the west and north-west, thirty to forty miles distant, appear summits quite as elevated. These higher mountains are clad with forests in which Pinus Montezumæ, Quercus reticulata and Q. grisea, and Arbutus varians are the more important species.

Every visitor to Guadalajara must see the great barranca. Passing northward over gravelly swells for five or six miles, one comes to the brink of a river-cut 1,500 feet deep. In the bottom he sees the Lerma, or Santiago, foaming white in its swift descent to the sea. The width of this barranca, from plain to plain, is about a mile. On its sides steep slopes alternate with sheer precipices hundreds of feet in height. The upper slopes are either open and grassy, or are covered with woody growths of numerous species. The lower or more accessible slopes are occupied by plantations of Bananas, Oranges, Mangoes and other tropical fruits; for into this gorge, where are gathered the warm rays of the sun, frosts and mountain breezes cannot descend. A paved trail, two miles in length, leads down to the river by zigzag windings over successive terraces, along the verges or bases of cliffs, and through dark alleys in Banana fields. The banks of the river are shaded by immense wild Figs and Cypresses. Beneath the shade is an Indian village, the huts being of the simplest construction, loose

walls of rock, surmounted by a thatch of coarse grass. Here, despite the shade, we find ourselves in the oppressive temperature of the tierra caliente. Passengers and freight are ferried across the river in rude canoes, while the beasts of burden are made to swim over. From the farther side of the river the traveler climbs out of the barranca by a trail equally long and difficult. During all the day there is a ceaseless stream of travel crossing this frightful chasm.

As I have descended into this barranca almost daily for weeks of several different seasons, and have searched about its cliffs of various exposures, clambered over its dizzy slopes, or crowded through its thickets, it has seemed that the number of plants which it holds must be inexhaustible. Each year it has yielded new species. Yet this is but the first and uppermost of the barrancas of the Santiago and its tributaries. For a hundred miles toward the coast there is a labyrinth of barrancas, whose wildness and grandeur are wonderful, and similar barranca systems have been formed by every stream which flows down from the table-lands.

During five seasons I had sojourned in Guadalajara for a few days or a few weeks at a time in different months of the year to work the surrounding country, its hills and plains, as well as its barrancas, and had taken out many hundreds of species; so my return last May was only to secure for general distribution certain new or rare species known to me, and to make one or two trips toward the sea before moving to a distant and fresh field. But while this object was being accomplished, so many plants offered themselves to my hand which were strange to me and promised novelty, that I kept to this field until the end of the season, and then brought out a richer harvest than ever before.

Among the finds of the past season the following are selected as possessing cultural value:

Vigna strobilophora, Rob., n. sp., is a twining vine with a woody stem about an inch thick (see fig. 30, p. 155). It climbs into the tops of shrubs and low trees, and shows abundant flowers which rival in beauty those of the cultivated Wistaria. The flowers are purple and white, and are borne in dense racemes two or three inches long. This plant and the next two belong to the Pea family.

Eriosema multiflorum, Rob., n. sp., is shrubby, two or three feet high, with branches terminating in several dense racemes of yellow flowers. It is a showy plant and remains in flower a long time.

Tephrosia macrantha, Rob. & Greeum, n. sp., to be described and illustrated in a following number.

Nemastylis flava, Rob., n. sp., is a pretty little Irid with yellow flowers less than an inch in width. It rises from a bulb.

Ipomœa perlonga, Rob., n. sp., a climbing Morning-glory, with numerous clear blue flowers with white throat.

Vitex pyramidata, Rob., n. sp., a small spreading tree found on rocky bluffs above Tequila; it is covered in June with large panicles of deep blue flowers. A flowering tree; is an unique object and shows to a distance.

Ehretia cordifolia, Rob., n. sp., a large tree of the Zapotlan district; when first seen it was profusely covered with large clusters of white berries, and elicited my admiration.

Eriodendron tomentosum, Rob., n. sp., is a large tree of warm barrancas, the bark covered with sharp bosses, with leaves resembling those of the Horse-chestnut, and white flowers six inches in length borne singly.

Two asclepiadaceous vines twining to ten feet, Mellichampia rubescens, Gray, and Gonolobus atratus, Gray, discovered in the vicinity of Guadalajara in 1886 by Dr. Palmer, deserve mention in this connection. The former is showy with profuse rosy flowers, which are large for this family. The latter is interesting by reason of its large star-like flowers, which are purplish black.

Charlotte, Vt. *C. G. Pringle.*

Botanical Notes from Texas.—XVII.

IN the woods around Eagle Lake grows Elephantopus Carolinianus, Elephant's-foot. This is a more eastern and northern species and it extends much farther westward. Growing in the sand near the lake, Rhynchosia menispermoidea may be seen. It is a species with a single leaflet. It has already been noticed as extending westward to Duval County. R. Texana, with three leaflets and similar flowers and fruit, is common.

During the last thirty days I have had abundant opportunity to interview all our species of Sesbania. S. Cavanillesii and S. Vesicania abound everywhere in damp places. They sometimes grow on gravelly hills. S. macrocarpa is rarer. Their continued presence along my line of travel has enabled me to determine some points in regard to their differentiæ. Most individuals of the first-named species bear light yellow flowers. Some of the plants, however, produce flowers which are orange-colored and marked with fine transverse purple lines. No difference is apparent in the fruit of these variant forms. The flowers of S. macrocarpa, too, are large and yellow. The wings of the flowers, however, are sometimes splashed with red. The fruit of this species is sometimes a foot long, a fact of which its specific name is significant. The flowers of S. vesicaria are very small. They are not one-half as large as those of its congeners. Its flowers are never yellow, but are always red, though the banners of the flowers sometimes mix a little yellow with their red. The pods of this species, which are about two inches long, are only two-seeded. The membranous lining of the pods becomes white at maturity. It is indehiscent, and protruding as the pods open, appears like a lolling tongue and gave to the species its former generic name, Glottidium.

Growing everywhere throughout central Texas, in sandy soils, is a large and coarse, but not homely, Composite, Heterotheca subaxillaris. It is common also in the "Territory" and in central Kansas to beyond the thirty-ninth parallel. Aplopappus divaricatus, another Composite, usually grows with this species, and throughout nearly the same range. These are not aristocratic plants; they are only common folks of the vegetable kingdom. But, like humble human common people, their lives and labors assist in making possible the existence of the so-called higher classes of plants and men.

Erythrina herbacea, a queer-looking member of the Pea family, is sometimes to be seen in the vicinity of the lake. Farther eastward it becomes so frequent, and so much in the way of more useful plants, that farmers do not like it. Making a woody stem six to ten feet tall, it is hardly herbaceous in Texas. Its prickly stems, smooth, nearly nerveless leaves, deltoid-hastate in outline, long terminal spikes of bright red flowers, which unjoint very readily, and large, coarse pods containing beans, colored like the flowers which they succeed, serve to make the species readily known.

Eagle Lake is set in a border of shrubs and trees. Live Oak is the most common tree. Some of the larger and more venerable ones, doubtless, remember when Miller named the species. They all appear to be well pleased that it is once more Quercus Virginiana. Post Oak, Water Oak, Bur Oak and Black Jack are also in the lake-woods; and Hackberry, Soap Berry (Sapindus), Red Mulberry, a small-fruited Thorn Apple, an Ilex (probably, I. Caroliniana), stately Pecan and other Hicorias, wide-spreading Elms and graceful Box Elder. Most of these trees, living or dead, are festooned with long pendent gray moss (Tillandsia), imparting to the forest a sombre and funereal aspect. And there are Willows here, hanging over the water—Willows that in all ages have been associated with times of grief and mourning.

Kansas City, Kansas. *E. N. Plank.*

Foreign Correspondence.

London Letter.

Rhododendron Schlippenbachii.—Flowering branches of this Chinese species of Rhododendron were shown last week by Messrs. J. Veitch & Sons, who have recently introduced it, and with whom it has grown and flowered as freely as R. Sinensis (Azalea mollis), to which it is closely allied. It is a loose-growing shrub, attaining a height of a yard or more, deciduous, with obovate leaves four inches long by two inches wide, hairy when young and of a dark brown hue. Probably the leaves turn green and lose much of their hairiness with age. The flowers are somewhat flattened, as in Azalea indica, three inches across, with obtuse lobes and colored a pleasing rosy-lilac, with a few

brownish dots about the base. There were six flowers in a cluster on some of the branches. The plant is almost certain to be at least as hardy as R. Sinensis, coming, as it does, from the wooded hills of Corea, where it was discovered by Oldham in 1863. A figure of it has been prepared for the *Botanical Magazine.*

Andromeda speciosa cassinifolia.—A group of plants in flower of this pretty little shrub was shown last week by Messrs. Veitch & Sons. They had been grown under glass, forced a little, perhaps, and they were heavily laden with clusters of white bell-flowers like glorified Lily-of-the-valley flowers. The brown wiry stems and ovate-glaucous green leaves set off the pretty flowers to advantage. The plant is quite hardy here, but out-of-doors it never looks so pleasing as did these plants which had been lifted and kept in a house for a few weeks.

Forsythia intermedia was awarded a certificate, some sprays of it being shown by Messrs. G. Paul & Son. It is a hybrid between F. suspensa and F. viridissima, and is well named, being intermediate between the two. It was raised on the Continent some years ago. It is better than F. viridissima, but inferior to F. suspensa, which is one of the most glorious of all our spring-flowering shrubs. This year it is exceptionally good.

Hybrid Narcissi.—Some beautiful hybrids and crosses among Narcissi have been raised in recent years, and one of the most successful raisers is the Rev. G. H. Engleheart, of Appleshaw, who exhibited a collection of his seedlings at the Royal Horticultural Society meeting last week, when a special effort was made by the Narcissus cult. Some of the seedlings were of value as proving the origin of many popular varieties which had been raised, no doubt, long ago, but whose history had not been recorded. The most distinct of the new combinations was a cross between N. triandrus and Empress. This had flowers as large as those of Empress, but with a long plain tube of the palest lemon-yellow shade. Another called Snowdrop, from N. cernuus and N. triandrus, had large drooping flowers with broad segments and a tube one and a half inches long, nearly an inch wide at the mouth, the margin not reflexed, and the whole flower milk-white. Pallidus præcox, crossed with cernuus, had produced a flower which might be called a pure white Empress or Madame De Graaf. Emperor, crossed with Maximus, had resulted in a fine Daffodil of a rich yellow color. Mr. Engleheart said this cross gives excellent color, but almost always smaller flowers than the parents. Poeticus, crossed with triandrus, had yielded a series of pretty forms, and a white seedling Vesta was particularly noteworthy. Clearly it is possible to add considerably to the value of the Narcissus, great though that value is at present, by judicious cross-breeding. Messrs. J. Veitch & Sons perceive this, and their collection of hybrids and crosses, shown last week, was almost as interesting as that of Mr. Engleheart. Among the general collections of Daffodils shown for prizes I noted the following for their excellence: Yellows—Golden Spur, Sir Watkin, Henry Irving, Maximus. Whites—Katherine Spurrell, Minnie Hulme. White, with yellow corona—Empress, Queen Bess. Yellow, with orange corona—C. J. Backhouse.

Beaumontia grandiflora.—This is a magnificent Apocynaceous climber, which requires plenty of space, liberal treatment and a sunny position in an intermediate house, when it will develop in early spring enormous clusters of white fragrant trumpets, as beautiful as the flowers of Lilium longiflorum, and not unlike them. In the gardens of Earl Cowper, at Panshanger, it has been an annual attraction for many years. This year it is as fine as ever, two large bunches of it being shown at the Royal Horticultural Society last week. For some reason it was called variety superba, although it is exactly the type as represented in the *Botanical Magazine*, t. 3213. The species is a native of the eastern Himalaya, where it scrambles up trees to a great height. In a stove it grows freely, but does not flower well. At Panshanger it is treated something like a vine, the shoots being cut back to a spur, and it is grown in a house in which the temperature falls to fifty degrees in winter.

Asparagus plumosus Sanderi.—This was awarded a first-class certificate, presumably because it is inferior as a decorative plant to the several varieties we already possess. It differs from all others in its short, apparently aborted leaves, which are scarcely an eighth of an inch long; in all other respects it is A. plumosus nanus. I am bound to add that it was admired by some authorities, the fact that it got the highest form of certificate implying that it pleased the majority of the members of the Floral Committee.

Tetrathesa ericoides.—This is a lovely little greenhouse shrub when grown as Mr. Balchin can grow it. He exhibited a group of it last week, which won universal admiration, each plant being about eighteen inches high, with numerous elegant shoots clothed with Heath-like leaves and wreathed from top to bottom with the richest rose-purple flowers. It is one of the prettiest of what used to be grown and loved here under the name of New Holland plants.

There was a fine exhibition of new and choice Orchids. Baron Schrœder sent grand spikes of rare Odontoglossums, including O. Wilckeanum, O. Ruckerianum, O. crispum Schrœderianum and O. Piscatorei Schrœderianum; glorious flowers all these were. Three plants of his new hybrid Lælia vetellina, one bearing a scape with three flowers, were most attractive to connoisseurs. It is a superb Lælia, and, although its parentage is unknown, its beauty is beyond all doubt, the flowers fully five inches across, in form not unlike L. Perrini, while the color is of the richest, dazzling apricot-yellow, with the narrowest white frill-like margin to the lip. Messrs. Veitch sent a new hybrid Dendrobium called Euryalus, and raised from D. nobile and D. Ainsworthii. It has large flowers as rich in color as D. nobile nobilius, with the large lip almost wholly covered with a deep maroon-crimson blotch. It was awarded a first-class certificate. Phalænopsis F. L. Ames, the hybrid between P. intermedia and P. amabilis, was shown in good form. Cymbidium eburneo-Lowianum was better than it has yet been seen, a scape bearing eight large yellowish flowers being borne by the plant. Epidendrum Endresio-Wallisii is another pretty little Veitchian hybrid with stems a foot high, short rigid leaves, and flowers colored brown-purple, with magenta lip. The beautiful white-flowered Phalænopsis Schilleriana vestalis was sent by Mr. Wigan, and Mr. Cookson sent a noble specimen of Dendrobium Venus, his hybrid between D. Falconeri and D. nobile. The plant was two feet high, with twelve stems clothed with flowers usually in pairs on slender pedicels, each as large as D. Falconeri and as rich in color as such a cross could scarcely help being. D. Rolfiæ is an interesting hybrid between D. primulinum and D. nobile. Two plants of it were shown. It resembles the last-named in form and color of segments, but the lip is more like that of D. primulinum, covered with velvety hairs, yellow, with a rosy tip.

Sir Trevor Lawrence sent a collection of forms of Dendrobium superbum, the type, the variety Huttoni, which is white, except the blotch on the lip; the variety Barkei, which is wholly white, with the faintest flush of pink, and Dayanum, generally called Anosmum Dayanum, which differs from ordinary superbum only in having a truncate lip. Dendrobium Cheltenhamense, also shown by Sir Trevor Lawrence, is a hybrid between D. aureum and D. lateolum, with large flowers, colored cream-yellow, with a few lines of red on the disk of the lip.

Phajus Sanderianus, with tall well-flowered scapes, was very handsome as shown by Messrs. F. Sander & Co., its rich crimson-brown segments and maroon lip, margined with rose, being very much finer than hitherto seen. Cœlogyne Dayana, from the same establishment, was also well shown.

Messrs. J. Veitch & Sons exhibited some improved varieties of Anthurium Scherzerianum, those in the way of the

mottled Rothschildianum being larger in spathe and better in color than any yet raised.

A collection of flowering branches of hardy trees and shrubs, sent from Kew, was a prominent feature in the exhibition.

A lecture on the rare trees and shrubs in the Arnold Arboretum, by Monsieur Maurice de Vilmorin, was an important item in the programme for last Tuesday. Monsieur Vilmorin described some of the most striking of the plants he saw, and compared the behavior of many of them with what they do in Europe, generally to the advantage of the former. The feeling created by the paper was that in the cultivation of hardy flowering trees and shrubs America is far more successful than we can ever hope to be, but that in the management of Coniferæ we are in advance of anything done Boston way. Monsieur Vilmorin spoke very highly of the arrangement of the trees, etc., and their management in the Arnold Arboretum. As his lecture will be published in the journal of the society I need not refer at greater length to it now.

London. *W. Watson.*

Fig. 30.—Vigna strobilophora.—See page 153.

Cultural Department.

Winter Pears.

DURING the past winter I had Anjou pears until February in fine condition, though never before later than the first of January. The excellent qualities of this pear place it in the very front rank, and its power to last until midwinter is a strong point in its favor.

Kieffer, which is generally considered and marked as an October and November pear, is really a January pear. I imagine much of the prejudice against it has arisen from the effort to eat it when it first turns bright yellow, which is in October or November. But if carefully stored in a dark cool cellar where there is a slight moisture the Kieffer is one of the best holiday pears.

The Reeder, or Dr. Reeder, is another good winter pear. I do not find it equal to the catalogue description—"a delicious pear for amateurs' use"; but it keeps well until nearly midwinter, and is a good dessert fruit. The tree has a habit of bearing early and heavily, and it will, therefore, be appreciated by those in haste to get fruit. A tree seven feet high on my lawn was loaded with fruit, and yet made a good new growth of wood.

The Winter Nelis is known to all Pear-growers. While its appearance is far from attractive, it is really a fine late keeper. It requires good storage, when December will bring it to perfection.

Lawrence, for an early winter pear, is unsurpassed for those who choose sweet fruit. The chief trouble with it is bearing too early and too much. To get excellent fruit you must thin out severely in summer, otherwise one-third of the crop will never have any flavor. This third will, in fact, lie in your bins without ripening until it is decayed. For this reason the Lawrence often disappoints purchasers, for a certain proportion of them is never eatable. They are just as worthless for cooking. I think the Reeder on large trees must also require very sharp thinning.

Clairgeau is hardly a winter pear, although it will keep well till about the first of December. It is a magnificent pear in appearance, weighing sometimes nearly a pound by the basketful, and is so brilliant in color that it always satisfies the eye, at least. But after twenty-five years' experience with it I cannot recommend it for general planting. If stored until the bright crimson cheek becomes delightful to look at, the least handling will cause the fruit to blacken. It is not often of the best quality for eating.

Josephine is a pear that keeps all winter, but I have not fruited it often enough to make sure that its quality is quite all that has been claimed for it. It bears on young trees in clusters. In appearance it is something like a small Anjou.

The Beurre d'Aremberg is not quite a satisfactory tree for crops, but I cannot overcome a strong desire for this pear in March. It is quite tart, but to my taste an admirable pear. It is very juicy and of good size. Its shy bearing does not adapt it to become a market fruit.

The secret of success with winter pears is leaving them on the trees rather late, or until sharp frosts, and then storing them in very cool cellars near the floor. I cover my bins with papers laid over thickly. The handling should be perfect, and the assorting done with great care. I regret to find that nearly all of our winter pears are sent to market very carelessly, and prematurely picked and ripened. They really are not ripe. Dropped and shaken pears should, of course, be placed in separate bins. It is a fruit worthy of greatest care. In case, however, October is unusually warm, I have found it necessary to pick my pears earlier and get them into cool storage.

Clinton, N. Y. *E. P. Powell.*

Methods of Setting Out Fruit-trees.

THE perennial tale, about the two men employed in planting an orchard, one of whom planted ninety-five trees in a day, and the other but five, of which all throve, while the others all failed, no doubt contains an instructive suggestion; and yet I have seen it the cause of a great deal of that waste of time which is a waste of money. I think it quite safe to say that there is no need of using up a day in setting out five trees of ordinary nursery size in any soil suitable for an orchard.

In the first place, it is a great mistake to dig a very large and deep hole for such a tree; and a greater mistake to waste time and money in mixing manurial substances, and especially animal manure, with the earth to be replaced about the tree. No experienced fruit-grower would think of starting an orchard upon a barren and poverty-stricken field. No money can be made in planting fruit-trees upon naturally poor or otherwise unsuitable land. If a naturally good soil, but somewhat worn, is chosen, the first thing to be done is to get it into good condition before planting any trees. In the selection of land for this purpose I know of no better rule than to take land such as originally bore a vigorous growth of native deciduous forest-trees. Where these throve, there is no good reason why any of our tree-fruits should fail. It is true that there is a difference between a light and a heavy soil in regard to their adaptation to particular kinds of tree-fruits, and heed must be given to this fact. Good orchards are grown upon somewhat heavy soils, provided there be good natural or artificial drainage; but a medium soil is best.

If there is good drainage and a proper soil there is no use in digging the holes any broader or deeper than will enable the planter to place every root of the young tree in a natural position, and at the same depth at which it grew in the nursery. The true secrets of success are to have vigorous, well-formed young trees, carefully dug, with abundant length of unmangled roots, and to set them firmly, working in the soil solidly against and about every root, applying no manure, and using no water. The best instrument for this purpose is the hand. Increasing experience has taught me that it is wise to lean the young trees about twelve degrees from the perpendicular toward the prevailing summer winds, the winds that blow strongest while the trees are in leaf. All mangled or bruised ends of roots I cut smooth, with an under cut. The roots should all slope downward. In suitable land, free from large stones, one capable man can dig at least forty holes suitable for three or four year-old nursery-trees, and two men, or a man and a boy, can set the trees well, all in a single day.

Newport, Vt. *T. H. Hoskins.*

Winter Protection of Half-hardy Plants.

DURING recent winters I have been studying the best methods for protecting half-hardy plants, and am satisfied that many species of plants might be carried over in the open ground with careful protection, even in climates more severe than ours. A large number of plants and roots will endure severe cold if they are kept dry, that would be destroyed by moisture. A water-proof cover is, therefore, sometimes necessary.

The stumps of Rose Geraniums are generally carried over with a simple mulch of Pine-leaves, and as the plants get old and woody at the base this protection is sufficient for ordinary winters in this latitude. But the exceptionally severe January of 1893 showed that this sort of covering is not always adequate. Even in that extreme weather, however, when the temperature was almost at zero, Erythrina crista Galli wintered safely under a mound of sawdust, a material which water penetrates very slowly, while another plant under a mound of soil much deeper was entirely destroyed. During the past winter we have had cuttings of Cassava buried and covered with Pine-leaves. Over this cover was placed a water-proof paper hay-cap. The Cassava has come through in fine condition for planting, and I am certain that it would have done so had the winter been even more severe. Some small Fig-trees were bent to the ground and covered with soil, as I formerly did in Maryland, but the cover was too close and warm for this mild winter, and many of the stems rotted. The stems and limbs of other Fig-trees were thatched tightly with broom-sedge, and these came through in splendid condition. But with plants that lose their leaves, like the Fig, in this climate, the past winter was a bad one to test any protection, for the check trees, left fully exposed, are better off than any of the protected ones. Had the winter been severe like the preceding one the buried Figs would have wintered better than those unprotected. Oleanders that had only a few green pine-boughs around them in the winter of 1892–93 were then killed to the ground. These plants were also thatched with broom-sedge during the past winter, and have come out green, but it must be added that Oleanders in sheltered places without cover have lost only their tender tips.

Of bulbous plants the more tender varieties of Narcissus are more liable to injury here than northward if planted in fall, as they start an untimely growth. If the planting is deferred until Christmas or January they do finely. Polyanthus Narcissus planted last fall, or, rather, allowed to remain from last winter's planting, had their flowers cut down by the cold late in February. Some planted in the fall of 1892 were entirely destroyed by the January cold of 1893, while others not set until the freeze was over gave a fine bloom and made good bulbs. Caladium esculentum, under a paper hay-cap, came

through all right, as did also Rose Geranium stumps and stumps of Lantana. Erythrina crista Galli, with a mound of sawdust over the stump and the protection of a paper hay-cap, would certainly come through an eastern New York winter, and these old undisturbed stumps make a wonderful growth and bloom in summer.

Tall paper hay-caps of a conical form, made especially for plant-protection, would afford excellent shelter for the dwarf sorts of Tea Roses, and they could be safely wintered under them in the winter when these plants are tender. The caps would also be useful to protect garden-plants from sudden cold in early spring. The amount of cold these thick waterproof manilla covers will keep out is surprising. I do not know how long they will last, but the paper caps I have used during two winters are uninjured. They could be made of any required height and size and sold in nests.

Raleigh, N. C. *W. F. Massey.*

Tuberous Begonias as Bedding-plants.

SUCH marked improvement has been made in the quality of tuberous Begonias during recent years, and they are grown in such large quantity, that good tubers of the best strains are now as cheap as ordinary Zonal Pelargoniums. From seed sown late in January we can have by the end of May good flowering plants which will make a fine show when bedded out. Dormant tubers, if they are not already started, should at once be placed in boxes of light sandy soil and barely covered. They should be watered sparingly until growths appear, for too much moisture will cause some of the tubers to rot. When the plants are nicely started they may be potted off or planted out close to the glass in a frame. We find that better plants are obtained in this way, and as these Begonias are easily lifted they sustain but a slight check when bedded out. In this latitude we set them out by the end of May in beds which have been heavily manured in the fall, as the Begonia needs strong feeding. They are happiest in a light, rich and moist soil.

Many attempts have been made to grow these plants in full sunshine, but this is rarely satisfactory, since few moisture-loving plants are comfortable when baking under the mid-summer sky. I have always had the best success with them in beds partially shaded by trees during the hottest part of the day, but last summer some of our plants did grow well in the full sun. It is useless to hope for the best flowers unless the plants are kept well-watered. Our beds receive a thorough soaking three times a week during the warmest part of the year. Mulching with finely decomposed manure is beneficial. The plants will root up into this, and more than one coating can be given with safety during the growing season. When they are well advanced it is advisable to give some support to the main stem, or such tornadoes as the one which swept over this region in August last year snap off their succulent stems. After the plants are cut down by frost we remove a part of the stem and spread the roots on a shelf in a dry shed, and the tubers, after the stems have been separated from them, are placed in boxes of dry sand in the cellar where the temperature is little above freezing, where they keep in good condition until time for starting again.

These Begonias have been superseding Geraniums in Great Britain as bedding-plants for several years. Last summer was exceptionally warm, but from friends who grow them by the thousand in that country I learned that they were superb. One of my correspondents stated that they could endure all the sun that ever shone in that country if they were kept moist enough at the root. In comparing Pelargoniums with Begonias, we may say, in favor of the latter, that they can be more easily stored in winter; that they are covered with bloom until the frost cuts them; that the flowers of a good strain will average from four to six inches across; that after a heavy rain-storm, when Pelargoniums are dashed to pieces, they look as fresh as ever.

Taunton, Mass. *W. N. Craig.*

Ferraria atrata.

IN 1870 I received a few bulbs of Ferraria undulata from E. H. Krelage, and have cultivated them ever since. During all this time I have seen but one flower, and am considering whether to try them any longer. This unsatisfactory experience had caused me to look askance at the whole genus, but accident has changed my mind. A few years ago I obtained a quantity of bulbs, not cultivated, directly from the Cape of Good Hope; these were supposed to be Gladioli, Homerias, Galaxias, Tritonias and Ixias, and were labeled as such. Taken in a wild state, they were encased in very dense and thick envelopes, the remains of several years' growth, so that the different kinds of bulbs were about identical in outer appearance.

The bulbs were relieved of their old husks and planted, and in the course of time dried off without flowering the first year. When removed from the pots they had more than doubled in size, and I found that there were two kinds in some of the pots. The intruders, being evidently of the same species, were potted separately, and when again turned out, still without flowering, were found to be larger than was natural for any bulbs of the species I had ordered, the largest being as large as an English walnut or Madeira nut. They were of a dark red color, irregular in shape, and much resembled pebbles in their general appearance. I had never seen any bulbs like them, excepting those of Ferraria undulata, which, however, are much smaller. Had I thought of the likeness at the time, I should, no doubt, have thrown them away. Last winter, having attained a flowering size, they blossomed profusely, and this year again they are in full flower. As soon as I saw the blossoms I saw that I had a new species of Ferraria, one, this time, as free-flowering as F. undulata is shy.

By the help of Mr. Baker's monograph I have identified the species as F. atrata. The leaves are narrow, thick, and of a darker green than is common in those of Cape bulbs. They curve outward and overtop the flower-stalk by an inch or two. The latter are about fifteen inches high and branch freely, the branches being short, and all terminating in flower-spathes, as does also the main stalk. These spathes are produced also along the sides of all of the branches, and are about two and one-half inches long, bright green, with a nearly white edge, and much inflated.

Even without a flower the plant, with its spathe-laden stalk, has a very unusual and attractive appearance. The blossoms, like those of the nearly allied Tigridias and Rigidellas, are individually short-lived, but are produced successively for some time from the same sheath. They have a diameter of about two inches, and consist of six triangular segments of a deep crimson color, and "trimmed," so to speak, with a curious edging which looks like olive-colored chenille. The anthers, arranged in three pairs, are orange in hue and conspicuous, and the pistil resembles a dense bush with yellow-tipped wings. The flower has a fragrance as odd as its appearance. Some consider it to be like vanilla, but the resemblance is not apparent to me. There is nothing in particular to say about the cultivation of the plant; the treatment usually given to Cape bulbs suffices.

Take it all in all, the plant is well worth the space it occupies, and I shall now proceed to get as many of the species of Ferraria as I can find.

Since writing this notice I have learned, by the blowing open of the greenhouse door in the night that this Ferraria is killed by an amount of cold which has no effect upon Tritonias, Ixias, Oxalis, Sparaxis and Babianas.

Canton, Mass. *W. E. Endicott.*

Tecophilea cyanocrocus, the Chilian Crocus, is a charming little gem of the purest, deepest gentian-blue. The flowers are borne on short scapes, and the six petals form an erect, partly spreading flower about two inches long, dark blue, with white markings at the base. Herr Leichtlin has, I believe, developed other forms with more white in the petals. It is difficult to see how the typical form could be improved. It is of a rare color in flowers, and much easier than a Gentian to establish. I regret not having tried these bulbs before, especially as they seem likely to prove hardy here. On that point there may possibly be some doubt, though this season they took their chances on a south border among Irises of the Reticulata group, and seem to have suffered not at all either in foliage or flower from hard frosts. It will probably be prudent to keep the bulbs thoroughly dry through the summer, lifting them if necessary. T. cyanocrocus is not a recent introduction, but is still scarce enough to be classed among those bulbs with which growers do not care to try hazardous experiments, and hence its extent of hardiness is not fully known. In Nicholson's *Dictionary of Gardening* it is rated as a greenhouse bulb.

Iris Sindjarensis, now in flower, is a bulbous Iris from Mesopotamia. It is botanically one of the Juno Irises, of which I. Persica and I. Caucasica are the best-known representatives. The leaves are lance-shaped, channeled, bright green, and stem-clasping. The flowers, which are borne in pairs, are of a slaty lilac on the styles, shading to a faint tinge of lilac on the falls, which are slightly dotted greenish blue. There is a slight trace of yellow on the ridge of the fall. This species of Iris is perfectly hardy with me on an exposed border. Professor Foster notes that it does not "spear" with him till the winter frosts are over. My specimen, for which I am indebted

to Max Leichtlin, appears above ground in November, and has not been injured by freezing. It is either a very shy-flowering or deliberate plant, as it now flowers for the first time, having been planted three years ago, at which time the bulb was apparently a strong one. I. orchioides, which is of the same family, is also in flower, and is similar in habit and foliage to the first-named species. It has bright yellow flowers, with a small blotch of brown on the fall. Unlike those of I. Sindjarensis, the flowers spring from the axils of the leaves.

Elizabeth, N. J. *J. N. G.*

Petunias.—A new strain of Petunias, said to have been originated in California, has proved very satisfactory with me. The seedsmen are selling them under different names, Giant of California being the name under which I bought them. I know of nothing among our more familiar flowers that better illustrates the power of selection. These flowers are four to five inches across, and of the most intense and brilliant hues. They are so far from coarseness that I think them decidedly more delicate in appearance than the older sorts. The plant is more woody and the foliage is not as fine. The flowers are often fringed and ruffled on the edges, some of them self-colored, but usually veined or splashed or striped with vivid markings. The substance of the petal is very heavy and thick, and the flowers emit a delightful perfume.

Clinton, N. Y. *E. P. P.*

The Chinese Wistaria.—This is a rampant grower, and will easily cover a thousand square feet in a few years. It has a decided tendency to produce an overplus of long, smooth, flowerless canes. In young specimens these should be selected with care, with a view to the proper distribution of the plant's energies in later years. Flowering wood may always be known by its short-jointed, stag-horn-like growth, absence of climbing spines, a conspicuous development of flower-buds and darker-colored bark. I am particular to make this distinction, as several amateur acquaintances of mine have been cutting away each year the "scrubby" growth and leaving the "good strong shoots," and then wondering why their vines do not bloom.

Wellesley, Mass. *T. D. Hatfield.*

Correspondence.

Hedges for Cold Climates.

To the Editor of Garden and Forest:

Sir,—I wish to make some inquiries about plants for an ornamental hedge about a formal flower-garden in Berkshire, Massachusetts. We have tried California Privet, which, so far as appearance goes, is very desirable, but on our exposed terrace it was winter-killed after three seasons. Is the Japanese Privet hardy? Is not Hemlock too coarse for a hedge about a garden within a garden, so to speak? Would you advise the Siberian Thuya, which is yellowish-green in color? Many plants which pass the winter here in safety seem to be overcome by the freezing nights and hot noon-day sun of March.

New York. *C. S. C.*

[Several species of Privet, or Ligustrum, can be grown to form first-rate hedges, but in a climate like that of Berkshire, Massachusetts, probably the common Privet, Ligustrum vulgare, would be the most reliable in point of hardiness. Ligustrum Ibota, from northern Asia, would doubtless be hardy, and it will probably prove useful for hedges, but its adaptability for this purpose has not as yet been tested. The Chinese and Japanese Ligustrum ovalifolium is hardy in the vicinity of Boston, and is very largely used for hedges about Newport and other places, but it is probably not hardy enough to make a reliable hedge-plant in the Berkshire region. It is a much handsomer species than the common Privet, and is commonly sold by nurserymen under the name of Californian Privet. All the Privets have white flowers, but when clipped as hedges few blossoms are produced. They make excellent hedges, bear pruning or clipping remarkably well, and in this climate they have the merit of holding their leaves until very late in the autumn.

For stronger deciduous hedges Beech, Honey Locust or Buckthorn will be found to answer well, and be quite hardy in western Massachusetts. Barberry will make a very pretty, though not very tall, hedge, and several other deciduous shrubs may be used. The Japan Quince serves the purpose admirably in the latitude of New York, but it can hardly be trusted to endure the winters of western Massachusetts. Spiræa Thunbergii would probably serve as a low hedge.

Among evergreens, Hemlock, Norway and White Spruce and Arbor-vitæ make excellent hedges, and prove quite hardy in regions where the winters are very rigorous. Hemlock makes the more beautiful, Norway Spruce the more rigid and impassable hedge. The American Arbor-vitæ is now cultivated in many forms, produced by selection and artificial propagation. They vary in coloration, in compactness and density of foliage and branches and in the size and habit of the plants. These so-called varieties are adapted for hedges or borders a foot or two high, or for hedges or screens up to ten feet or more in height. The evergreen sold by nurserymen as Siberian Thuja, or Siberian Arbor-vitæ, also as Thuja Tatarica and Thuja Sibirica, generally proves to be simply a fine form of our common Arbor-vitæ, Thuja occidentalis, which was originally sold as T. occidentalis, Wareana. It has darker foliage, and in some other respects it is considered superior to many of the forms on the lists for making hedges and screens.

In trimming or clipping hedges of Hemlock, Spruce or Arbor-vitæ into formal shape they should be cut with the sides sloping up to the apex, so as to be wider at the bottom than the top. Thus the lower branches will get more light and air than they would if the sides of the hedge were perpendicular, and they will not be so likely to lose their leaves and die.—Ed.]

Late Frosts in the South-west.

To the Editor of Garden and Forest:

Sir,—Spring in the southern Ozarks is a particularly exasperating season. Apparently it is early, and so seductive are the south-land zephyrs and genial sunshine that each year we disregard our former experiences and believe that summer has come. Then the northern gales sweep down upon us with frosts, and possibly sleet in their train, and all our flowers are seared and ruined. Too often our flattering prospects of an abundant fruit-crop are swept away in a night. Each year has these trying fluctuations, but this spring has presented the most marked extremes ever known to the oldest inhabitant. After a month of almost summer weather, March went out in snow, hail, sleet and severe freezing. The damage done to fruit alone is incalculable, many trees being killed outright.

Our shade and fruit trees, ornamental shrubbery and miscellaneous planting suffered severely. Yet, now that fair, sunny weather is once more here, we find the damage to our ornamental planting much less than we had supposed, and in less than a week after the great storm our grounds are bright with bud and bloom. This is the result of precaution, not of chance. In view of our uncertain springs, we have long since settled on a course of action, which, in brief, is this: (1) Early blooming shrubs and vines, whose large size makes all outer covering inexpedient, are planted at the north and east part of our grounds, so as to be sheltered from the south wind by buildings as much as possible. This makes the flower-buds swell at least two weeks later than they otherwise would, and, in most seasons, insures safety from injury by late frosts. (2) Early spring bulbs and perennials are given the advantage of every sunny slope or southern exposure, to facilitate early maturity. The earlier sorts are generally well out of the way before the reactionary equinoctial and Easter storms make their appearance, while the medium and later spring sorts can be covered, even if in full bloom, should a cold wave be upon us, and so escape destruction. We always keep on hand a liberal supply of old carpets, gunny sacks, etc., ready to cover our flower-beds at a moment's notice. Besides this, our beds are always given a heavy mulching in the late fall, and, blanketed both at root and top, are able to endure severe cold.

We who live in an intermediate latitude, between north and south, must expect many rapid alternations of heat and cold. To escape injury to our spring and early summer display of flowers, we must retard premature vegetation in the spring, or else afford ample protection during severe weather. I can illustrate the value of this advice from our own experience.

First as to retardation: For seven years we had in our south

shrubbery two Tree Pæonies which never bloomed, and one of the newer Lilacs, which never bloomed but once in all that time. Each spring the flower-buds swelled early in the season, only to be killed in late March by the usual cold wave. At last we had careful workmen transplant the three shrubs into the north shrubbery, and have had no trouble since. The buds start late and swell slowly, so that they pass the danger-period in safety.

And, secondly, in the way of protection: During the excessively warm weather of early and middle March, not only were spring plants in bloom, but early summer plants were well advanced. Pæonies, Lilies, late Daffodils, Iris Germanica and I. Kæmpferi, Clematis, etc., had made much growth, and some of them were even budded. Then came the phenomenal cold of late March. We could not see the promise of two months' beauty swept away in a single night, and the whole household was summoned to the rescue. When the regular supply of sacks, blankets and sheets fell short we supplemented them by anything that could cover a plant or group of plants—tubs, buckets, boxes, flower-pots, tin pans, etc.—and left them undisturbed over our plants the three or four days that the cold weather lasted. No doubt, the singular decoration of our home-acre excited some mirthful comment, but not a plant or flower was lost that was covered, while a few Irises and Lilies that were overlooked were frozen to pulp.

Pineville, Mo. *Lora S. La Mance.*

Snow in April.

To the Editor of GARDEN AND FOREST:

Sir,—The frosts and snows of late March and early April have devastated the gardens hereabout, as vegetation was so unusually forward. Cherries and Plums were in full bloom late in March when the sudden freeze came, and Peach-trees showed rich color. Every bud and blossom on all these trees were blackened, and we will have to wait for another spring to see them again in perfection. Apple-trees were not yet in bloom and are not so much injured. Of the shrubs in bloom, the flowers of the Japan Quince were spoiled, but the fragile-looking Spiræa Thunbergii was little damaged. It was a strange sight to see its tiny blossoms and green leaves peeping out of a weight of snow that bowed its slender branches to the ground. A large Blackheart Cherry also presented an unwonted spectacle, with its white flower clusters covered with balls of whiter snow, and the Forsythia-bushes were a charming study in white and yellow, as their bright flowers shone through their powdery covering. To-day, April 12th, the sun is shining at last and the snow is nearly gone, and we can almost find it in our hearts to forgive April for playing us such a trick for the sake of the novel beauty of the spectacle.

Shepherdstown, W. Va. *Danske Dandridge.*

Orchids at North Easton.

To the Editor of GARDEN AND FOREST:

Sir,—Among the Old World Orchids, Dendrobiums make an interesting group. Some are very dwarf, with short pseudobulbs like D. Jenkinsii, while others like D. Dalhousieanum form noble specimens, four to five feet in height. They generally bloom on the well-ripened deciduous stems, sometimes the growth of the previous year and sometimes of the current year; while it is no uncommon thing to see the well-known D. nobile blooming on the bulbs of two seasons' growth. The blooming season of the majority is in early spring and summer, but there is no season of the year at which some one or other will not be in bloom in Langwater gardens. From an ornamental aspect some of the species are very effective.

Dendrobium euosmum leucopterum, a very rare and beautiful hybrid, is one of three seedlings from the same seed-capsule. It combines in a wonderful way all the best qualities of its parents, D. endocharis and D. nobile, and even of some of its remoter ancestors. D. endocharis is itself a hybrid between D. Japonicum and D. aureum. From D. endocharis we trace the white and magenta markings in the disk and lip. The primrose perfume may be traced to D. aureum, while from D. nobile comes the size and form of the flower characteristic of that fine species. It is more robust than D. endocharis, but dwarfer than D. nobile. From an ornamental point of view the plant is superb. The fine variety Burfordense, or Arnoldianum, of D. nobile has for its distinctive feature the maroon blotch, so common in the type, marking the basal half of the two lower sepals, as well as the lip.

The variety of Dendrobium splendidissimum, named in honor of Mr. Robinson, the gardener here, is of the same parentage as D. Leechianum, D. splendidissimum and D. Ainsworthii. The general form is that of D. splendidissimum; the petals, however, are white, suffused with rose, the disk of lip more nearly approaching that of D. Ainsworthii in color, which is claret, but it is larger and brighter than in that beautiful hybrid.

Epidendrum O'Brienianum is a handsome vermilion-crimson hybrid between E. evectum and E. radicans, with the fringed crest peculiar to E. evectum. The plant is a tall and ungainly grower, but no words can describe the beautiful effect of the color of its flowers.

Cattleya Patinii alba is a recent introduction from Guatemala, and very similar in habit and form of flower to C. Skinneri alba. There is, however, no dark disk, and, with the exception of a pale lemon tint on the crest, it is pure white.

Odontoglossum crispum, var. Wellsianum, is one of the most gorgeous varieties in existence, and very rare. The spike is large, covered with closely set flowers of the largest size. Petals broad at base, completely closing the circle, making a full round flower. The ground color of the sepals is pink, with a large irregularly oblong brown blotch on the dorsal sepal, and one or more blotches of the same color on the basal sepal. Petals pure white. There is an oblong brown blotch on the centre of the lip. The keel and crest are pure golden yellow, and the column beautifully marked and spotted with brown and pink. The whole plant makes a striking effect as a specimen. O. Leeanum is a unique natural hybrid. The ground color of the flower is primrose-yellow, with brown spots. It is very rare.

Odontoglossum roseum is a dwarf, compact plant, carrying graceful spikes a foot long, with as many as twenty flowers closely set and of a uniform carmine color, except on the column, which is white. The flowers are an inch across, and altogether the plant makes a very effective specimen.

Wellesley, Mass. *T. D. Hatfield.*

Recent Publications.

Our Native Birds of Song and Beauty. By Henry Nehrling. With thirty-six colored plates after water-color paintings by Professor Robert Ridgway, Professor A. Goering and Gustav Meutzel. Vol. I. George Brumder, Milwaukee.

We have from time to time made brief mention of the successive parts of this work as they appeared, and commended them not only for their value in giving the scientific descriptions of our numerous birds, with graphic sketches of their daily lives and habits, but because they contained a very considerable amount of substantial information about our trees and plants skillfully and helpfully mingled with the bird lore. The entire work is to be completed in two volumes, and now that the first volume has appeared in tasteful binding we take great pleasure in commending it to every one who is interested in natural history or who takes any intelligent delight in the woods and fields. The plates are well colored and the figures are drawn with much spirit, while the typical vegetation with which they are surrounded is always full of accurate suggestion. The introduction, which treats of the migration of birds, their utility, their enemies, the best ways of protecting them, and many other general subjects of this sort, is entertainingly written, and contains the latest views and experience of the best authorities. The volume contains eighteen plates with portraits of sixty-eight different species, and the descriptions are popular, in the best sense of the word. By this we do not mean that they are not scientifically accurate and that they contain no technical details, for a certain amount of technical language is an absolute necessity in a work of this sort if it is to have any serious value for students. But it is not a book addressed to ornithologists alone; it is not loaded with the history of synonyms; it does more than present to our notice birds as mounted skeletons or as stuffed specimens. In short, it introduces us to birds that are alive in living woods and thickets. We see the robin with his plumage stained with poke-berry juice; the mocking-bird singing from a Magnolia draped with Spanish moss; the creeping warbler building his nest under a Fern-frond; the bluebird gallantly attacking the trespasser upon his home, and the brown thrasher flitting through a road-side thicket. The book is not a compendium of what other people have

found out about birds, but an account of them by one who has watched them with his own eyes, and who, without any effort to be sentimental, invests the subject with that subtile and poetic charm which appeals to every true lover of nature. The author is evidently inspired by his subject, but he never allows his enthusiasm to carry him into mere rhapsody, and always remains judicious and self-controlled. In other words, the book is genuine, and therefore fresh and fascinating, but never exaggerated or untrustworthy.

Notes.

Professor Sturges, mycologist of the Connecticut Experiment Station, has just published a Provisional Bibliography of the more important works published by the United States Department of Agriculture and the agricultural experiment stations, from the year 1886 to 1893, inclusive, on fungous and bacterial diseases of economic plants.

Some twelve years ago an English importation of bulbs from Asia Minor included one which, when it flowered, gave every evidence of being a natural hybrid between Scilla bifolia and Chionodoxa Luciliæ. It bears deep blue flowers in racemes, on a peduncle about six inches high, and they open a little later than either the Squill or Chionodoxa, which are supposed to be its parents. It has received the name of Chionodoxa scilloides. The plant is very interesting, not only from its supposed parentage, but because of its beauty and the desirability of having as many forms of early and hardy bulbous plants in our gardens as possible.

The interesting Eulophiella Elizabethæ, which was brought to Europe rather more than a year ago from Madagascar, and received a good deal of advertising on account of the marvelous way in which it was mixed up with wild beasts and princesses, in a romantic tale told by its collector, has been blooming in England. According to the *Orchid Review*, the flowers are over an inch and a half across, waxy white, tinged on the back of the segments with reddish pink. The disk of the lip is deep yellow, while its base and the column are marked with orange. The racemes and the bracts are said to be a deep reddish purple. It grows freely hanging in a warm, moist house, and ought to be a popular favorite.

A writer in the *Gardeners' Chronicle* speaks of the beauty of the Dog-tooth Violets which have just been coming into bloom in the rockery and other parts of the grounds in Kew. They have been planted there very freely during recent years, and have proved excellent plants as a carpet among groups of shrubbery. These plants could be used much more often to advantage in our own gardens, where the common European variety, Erythronium Dens-Canis, seems quite as hardy as our own neat little E. Americanum and the larger-flowered E. grandiflorum of our western states, with its varieties. No doubt, other species of our north-west, like the beautiful E. Hendersoni, of Oregon, might prove hardy here. Many of them could be naturalized among shrubbery and along wood walks with admirable effect.

Experience has shown that the season is not so short in South Dakota but that Tomatoes can be grown in the open air, although between the frosts of spring and autumn last year but 108 days intervened, while Tomatoes need about 140 days to produce a crop from seed. Of course, the plants have to be started indoors, and at the station in Brookings it has been shown that for ordinary purposes nothing is gained by sowing seeds before the 1st of March. A trial with seeds from green fruits gave larger fruits and a greater weight per plant than with seed normally ripened. Plants from cuttings proved decidedly earlier and more productive than plants from seed. It was found also that where the plants were cut back to make them shorter-stemmed and more stocky the fruit matured more slowly.

From a letter received from Mr. Joseph Meehan, of Germantown, we find that the Yellow Jasmine, Cornus mas, Magnolia stellata and Daphne Mezereum were about past their flowering more than a week ago. About the same time the flowers of Magnolia conspicua, Andromeda Japonica and Rhus aromatica were in good condition. Since then we have had another snow-storm, but Mr. Meehan writes that Lonicera fragrantissima is still covered with its creamy white blossoms, although it has been in flower for a month, while the native Spice-bush, Lindera Benzoin, is also displaying its yellow blossoms. The Almond, Apricot and Nectarine have flowered successively in the order named, while Peaches are just opening their blossoms with those of Spiræa Thunbergii and Corylopsis spicata. In Boston, on the contrary, neither Rhus aromatica nor any of the Andromedas or Magnolias or the Corylopsis are yet in flower. Such differences in the seasons between the middle and New England states illustrate the difficulties of making any calendar of garden operations which is adapted to any considerable portion of this big country.

The nearest approach to a novelty in market flowers last week was Moss Roses, offered at seventy-five cents for a spray about six inches long containing a half-open bud and perhaps two or three smaller buds. They were very pretty, but even at such a retail price as this the grower would not realize very much, and we apprehend that they only commanded this figure on account of their scarcity. We observe, also, a rather free offer of Anthuriums for use in decorations where a flash of crimson is needed. Apple-blossoms from the vicinity of Washington cost fifteen dollars for a big armful of the branches, and small nosegays of trailing Arbutus are twenty-five cents each. One can hardly suppress a sentiment of pity on seeing the latter flowers for sale on the streets, as every cluster sold here means the loss of so much beauty in the woods, where they properly belong, and from which there seems danger that they will ultimately be exterminated. Ten-weeks stocks bring seventy-five cents for six spikes. Cut-flower dealers, as a rule, represent that their business is extremely dull.

Professor Goessmann, of Amherst, has been studying special fertilization with reference to garden crops. Of course, such crops need a soil rich in available plant-food because of their short period of growth. An excessive accumulation of half-decayed vegetable matter, such as stable-manure and compost from the refuse material of the garden, is objectionable, from the danger of parasitic growths, and although commercial fertilizers enable us to meet more directly the special wants of every soil, it is found that some garden vegetables, like Lettuce, are very sensitive to an excessive amount of soluble salines, and these, therefore, should be avoided. Of course, rotation of garden crops is to be commended, because they consume plant-food in different proportions, and in this way regulate the accumulation of the various essential constituents of plant-food in the soil. A mixture containing a proportion of twenty-four per cent. of potassium oxide, twelve per cent. of phosphoric acid, and twelve per cent. of nitrogen is recommended, while in the case of Cabbages, Turnips, Lettuce, Asparagus and some other plants, small quantities of nitrate of soda should be added at different times. In beginning the cultivation of garden vegetables and orchards on new lands the lower layers of soil should be plowed deeply and enriched with a supply of natural phosphates. Wherever there is a great accumulation of vegetable matter the application of burnt lime will assist in liberating the plant-food and favor beneficial bacterial life in the soil.

We occasionally see in fruit-shops in this city where West India products are sold a green oblong or pear-shaped fruit four or five inches long, with deep channels and a skin smooth, although it is sometimes covered with small, innocuous prickles, and when the solid flesh is cut through it shows one large seed. This is popularly known as the Chocho, and is the fruit of Sechium edule. Although it has never attained any popularity in this country, it is largely grown in tropical countries, and last autumn specimens were sent here from New Orleans, where its cultivation is said to be extending. The fruit plainly shows that the plant belongs to the Gourd family, and it is really a climbing perennial, with a root which is a large tuber sometimes weighing as much as twenty pounds and resembling a yam, both in appearance and in flavor when it is cooked. The fruit may be peeled, quartered, boiled and served like vegetable marrow, or it can be parboiled and baked under a joint of meat and served like potatoes. When cooked it resembles turnips somewhat in flavor, and it is also eaten raw as a salad. It should not be allowed to ripen before it is gathered, but should be picked green, as cucumbers are. Analysis shows that it contains four times as large a percentage of albuminoids as potatoes do, and it has about the same nutritive value as cabbage. In the West Indies it is considered very wholesome. *The Agricultural Gazette* of South Wales considers it among the most valuable of garden esculents and recommends it to every farmer in that climate for cultivation, since the fruit and tuber both make excellent food for animals. It is also a quick-growing climber, admirable for covering fences or training over trellis-work to hide unsightly objects. It is, too, a good honey plant. A single vine will bear thousands of fruits.